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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/781,737

02/20/2004

Atsushi Sakamoto

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04/04/2006

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EXAMINER

HSIEH, SHIH WEN

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/781,737

Applicant(s)

SAKAMOTO ET AL.

Examiner

Shih-wen Hsieh

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 9-11, 14-18 and 20 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 8, 12, 13 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5-19-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 are rejected under 35 U.S.C. 102(b) as being anticipated by Ono (US Pat. No. 6,231,156 B1).

In regard to:

Claim 1:

Ono teaches:

An inkjet printing apparatus having a printhead (fig. 1A, also refer to col. 7, lines 8-18) with an orifice surface in which a plurality of orifice groups (1k, 1c, 1m and 1y, fig. 1A) each formed by a plurality of orifices for discharging ink are formed, and cleaning means (6, fig. 4) for cleaning the orifice surface, comprising:

Art Unit: 2861

counting means for detecting and storing an ink discharge count of each orifice group, refer to col. 9, lines 12-15; and

cleaning control means (301, fig. 5) for cleaning the orifice surface by the cleaning means in accordance with ink discharge counts of the plurality of orifice groups, refer to col. 7, line 66 to col. 8, line 6; and col. 9, lines 12-23,

wherein in said cleaning control means, an ink discharge count used to execute cleaning in accordance with a discharge count of ink discharged from an orifice group formed at a predetermined position of the printhead out of the plurality of orifice groups, and an ink discharge count used to execute cleaning in accordance with a discharge count of ink discharged from another orifice group formed at a position different from the orifice group formed at the predetermined position are different, refer to col. 9, lines 23-40; and fig. 6.

Claim 2:

Ono further teaches:

wherein said cleaning control means determines, on the basis of the discharge count of each orifice group that is stored in said counting means, whether a predetermined cleaning condition which changes in accordance with a formation position of the orifice group has been established, and when the predetermined cleaning condition has been established, executes cleaning, refer to fig. 6, in fig. 6, the predetermined cleaning condition is the threshold values, which are decided according to formula (1) in col. 9, and the cleaning of each nozzle group, such as cleaning of Black ink nozzle group, when $ck > tk$.

Art Unit: 2861

Claim 3:

Oho further teaches:

wherein said cleaning control means determines as the predetermined cleaning condition whether the discharge count of each orifice group has reached a predetermined count, and in the predetermined cleaning condition, a predetermined count corresponding to an outer orifice group and a predetermined count corresponding to an orifice group arranged inside from the outer orifice group are different, refer to fig. 6, and the predetermined count in this claim is the respective values of t_i , where $i = k, c, m, \text{ or } y$.

Claim 4:

Oho further teaches:

wherein said cleaning control means determines as the predetermined cleaning condition whether the discharge count of each orifice group has reached a predetermined count, and

in the predetermined cleaning condition, a predetermined count corresponding to the orifice group formed at the predetermined position and a predetermined count corresponding to said another orifice group formed outside the orifice group formed at the predetermined position are different, refer to fig. 6, e.g., the predetermined count for t_k and t_c are different, and also please refer to fig. 1A for orifice groups formation; and formula (1) in col. 9, which is used to determine the respective values of t_i , the threshold value for each orifice groups, this t_i is the predetermined count used in the instant application.

Art Unit: 2861

Claim 7:

Oho further teaches:

wherein the predetermined count corresponding to the outer orifice group is larger than the predetermined count corresponding to the orifice group arranged inside from the outer orifice group, refer to fig. 6, and col. 9, line 57 to col. 10, line 63, specially col. 10, lines 61-63. Note: Oho uses the processing liquid head as a base point to determine the respective distances of the respective ink heads to the base point, therefore, under this circumstances, black ink head is considered as the outer orifice group, the rest of the orifice groups are considered as the groups arranged inside the outer group.

Claim 9:

Oho further teaches:

detection means for detecting a distance between the orifice groups formed in the printhead; and

setting means for setting the cleaning condition in accordance with the distance between the orifice groups that is detected by said detection means, refer to formula (1), actually, Oho does not explicitly teach a detection means and setting means as claim 9 does, however, the d_i in formula (1) can be seen as a detection result, and from such a result, multiplies by a constant K to arrive the respective t_i , therefore, threshold values t_k , t_c , t_m , and t_y are derived, this is a setting procedure, also not explicitly expressed by Oho. In another words, the detection means and the setting means are all implicitly taught by Oho.

Art Unit: 2861

Claim 10:

Oho further teaches:

wherein when said cleaning control means determines that the predetermined cleaning condition for any one of the orifice groups of respective inks has been established, said cleaning control means cleans the orifice surface, refer to fig. 6.

Claim 14:

Oho further teaches:

wherein said cleaning means includes wiping means for wiping an end face of the orifice by an elastic member, refer to col. 9, lines 36-40.

Claim 15:

Oho further teaches:

wherein the orifice groups are arranged for at least yellow, magenta, and cyan colors, refer to fig. 1A.

Claim 16:

A cleaning control method for an inkjet printing apparatus having a printhead with an orifice surface in which a plurality of orifice groups each formed by a plurality of orifices for discharging ink are formed, and cleaning means for cleaning the orifice surface, comprising:

a counting step of detecting and storing an ink discharge count of each orifice group; and

a cleaning control step of cleaning the orifice surface by the cleaning means in accordance with ink discharge counts of the plurality of orifice groups,

Art Unit: 2861

wherein in the cleaning control step, an ink discharge count used to execute cleaning in accordance with a discharge count of ink discharged from an orifice group formed at a predetermined position of the printhead out of the plurality of orifice groups, and an ink discharge count used to execute cleaning in accordance with a discharge count of ink discharged from another orifice group formed at a position different from the orifice group formed at the predetermined position are different.

Rejection:

This method claim corresponds to the apparatus claim 1, and the steps in this method claim are deemed to be made inherent by the functions of the structure in the combination discussed above for claim 1.

Claim 18:

The method according to claim 16, wherein in the cleaning control step, when the discharge count of each orifice group that is stored in the counting step reaches a predetermined value, the cleaning condition is determined to have been established and the orifice surface is cleaned, and a predetermined count corresponding to an outer orifice group and a predetermined count corresponding to an orifice group arranged inside from the outer orifice group are different.

Rejection:

This claim is rejected on the basis as set forth for claims 4 and 7 discussed above.

Claim 20:

An inkjet printing apparatus having a printhead with an orifice surface in which a plurality of orifice groups each formed by a plurality of orifices for discharging ink are formed, and cleaning means for cleaning the orifice surface, comprising:

storage means for storing, for each of the plurality of orifice groups, information on a discharge amount of ink discharged from the orifice group; and

cleaning control means for cleaning the orifice surface by the cleaning means when an ink discharge amount represented by the information stored in said storage means exceeds a predetermined amount,

wherein an ink discharge amount used to shift to cleaning operation is different between an orifice group formed at a predetermined position of the printhead and an orifice group formed at a position different from the orifice group formed at the predetermined position.

Rejection:

Recitations in this claim are similar to those recited in claim 1, Oho's fig. 6 is also read on this claim, therefore, this claim is rejected on the basis as set forth for claim 1 discussed above.

4. Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oho in view of Shimoda (US Pat. No. 6,382,764 B1).

In regard to:

Claim 11:

The device of Oho DIFFERS from claim 11 in that it does not teach:

wherein said cleaning control means defines, as a discharge count of ink discharged from the printhead, a value obtained by multiplying the discharge count of each orifice group by a weighting coefficient corresponding to a formation position of the orifice group, determines whether the cleaning condition of the printhead has been established, on the basis of the discharge count of ink discharged from the printhead, and when the cleaning condition of the printhead has been established, executes cleaning.

Since the value of the discharge count is obtained by multiplying the discharge count of each orifice group by a weighting coefficient corresponding to a formation position of the **orifice group** (singular number), and the weighting coefficient in this claim is also a singular number (i.e., not differentiated among orifice groups), therefore, based on that Shimoda teaches in his fig. 5 a recovery suction (one type of cleaning process) based on a printing dot count (A) of a print head, and also in the process, a weighting coefficient (W) corresponding to head temperature (D) is obtained, this dots count (A) multiplied by (W) compared with the total number of printing dots (B) so as to decide whether a recovery suction has to be taken place. In Shimoda's reference, dot count (A) is the discharge count in the instant application, weighting coefficient (W) is the weighting coefficient in the instant application, refer to col. 6, lines 3-58.

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the device of Oho to include the weighting coefficient, which is related to the head temperature, as taught by Shimoda for the

Art Unit: 2861

purpose of adjusting the frequencies of performing suction recovery due to head temperature change.

Claim 17:

The method according to claim 16, wherein in the cleaning control step, a value obtained by multiplying the discharge count of each orifice group that is counted in the counting step by a weighting coefficient corresponding to a formation position of the orifice group is defined as a discharge count of ink discharged from the printhead, whether a cleaning condition of the printhead has been established is determined on the basis of the discharge count of ink discharged from the printhead, and when the cleaning condition of the printhead has been established, cleaning is executed.

Rejection:

This method claim corresponds to apparatus claim 11, and the steps in this method claim are deemed to be made obvious by the functions of the structure in the combination discussed above for claim 11.

Allowable Subject Matter

5. Claims 5, 6, 8, 12, 13 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2861

6. The following is a statement of reasons for the indication of allowable subject matter:

In regard to:

Claims 5 and 6:

The primary reason for the allowance of claims 5 and 6 is the inclusion of the limitation of a weighting coefficient corresponding to an outer orifice group and a weighting coefficient corresponding to an orifice group arranged inside from the outer orifice group are different. It is this limitation found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

Claim 8 depends on claim 5 and is also allowable.

Claim 12:

The primary reason for the allowance of claim 12 is the inclusion of the limitation of wherein a weighting coefficient corresponding to the orifice group formed at the predetermined position and a weighting coefficient corresponding to said another orifice group formed outside the orifice group formed at the predetermined position are different. It is this limitation found in this claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claim 13:

The primary reason for the allowance of claim 13 is the inclusion of the limitation of wherein the weighting coefficient is changed in accordance with the distance between

Art Unit: 2861

the orifice groups that is detected by said detection means. It is this limitation found in this claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claim 19:

The primary reason for the allowance of claim 19 is the inclusion of the limitation of a weighting coefficient corresponding to an outer orifice group and a weighting coefficient corresponding to an orifice group arranged inside from the outer orifice group are different. It is this limitation found in this claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-wen Hsieh whose telephone number is 571-272-2256. The examiner can normally be reached on 7:30AM -5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, S D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

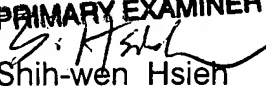
Application/Control Number: 10/781,737

Page 13

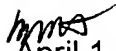
Art Unit: 2861

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

SHIH-WEN HSIEH
PRIMARY EXAMINER

Shih-wen Hsieh
Primary Examiner
Art Unit 2861

SWH


April 1, 2006